(No Model.) 2 Sheets—Sheet 1.

F. THURNAU & A. HAMPE.

CIGAR BUNCHING MACHINE.

No. 343,349. Patented June 8, 1886.

Fig. 1

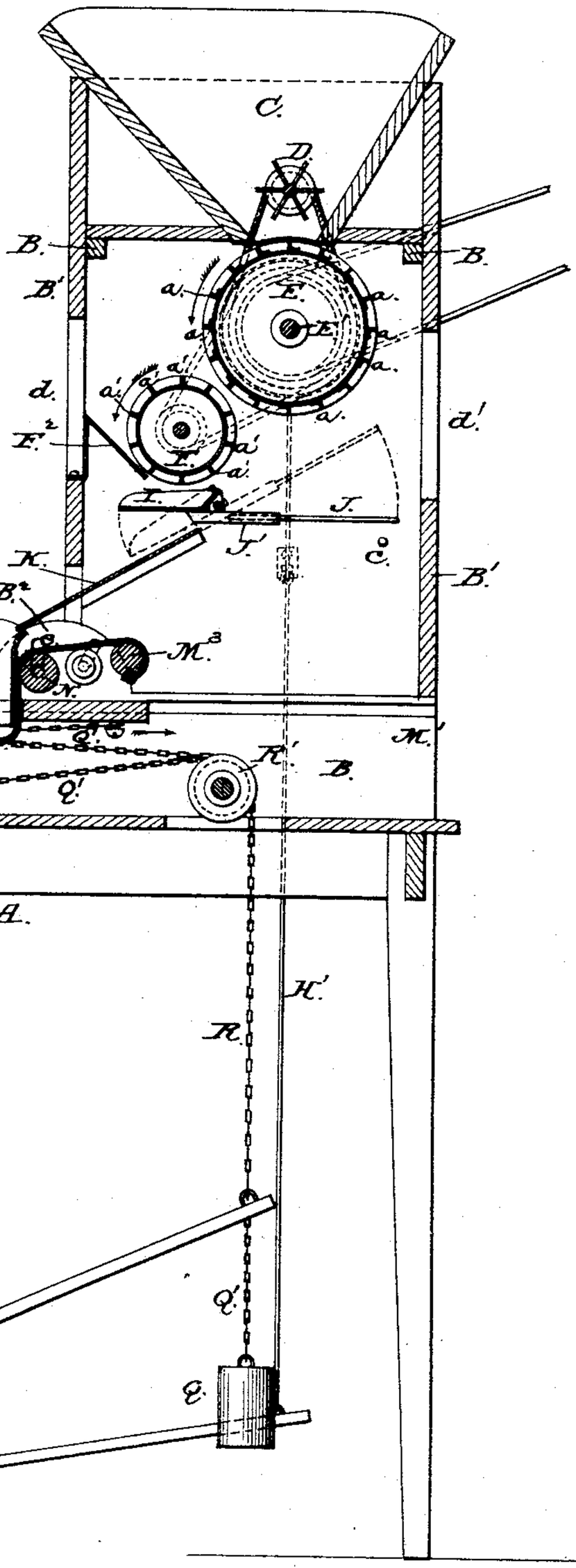
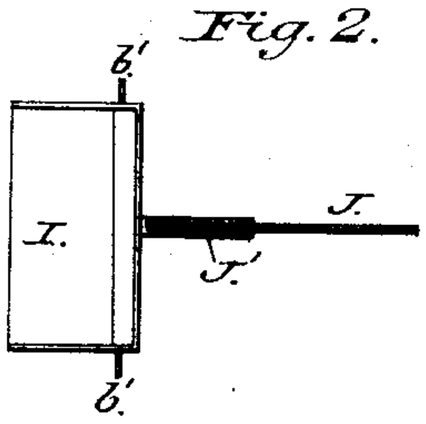


Fig. 2.



Attest:
John A. Ellis
Rena Dolson

Inventors:
Friederich Thurnau
Adolph Hampe
By David A. Burr
Atty.

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

F. THURNAU & A. HAMPE.

CIGAR BUNCHING MACHINE.

No. 343,349. Patented June 8, 1886.

Fig. 3.

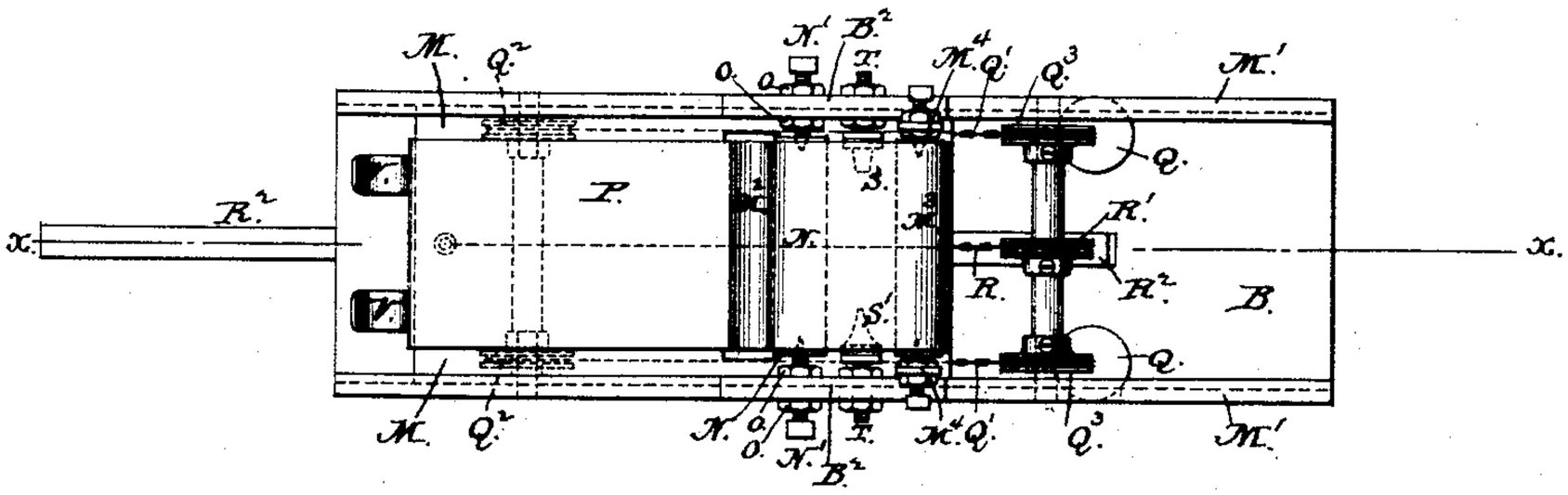


Fig. 4.

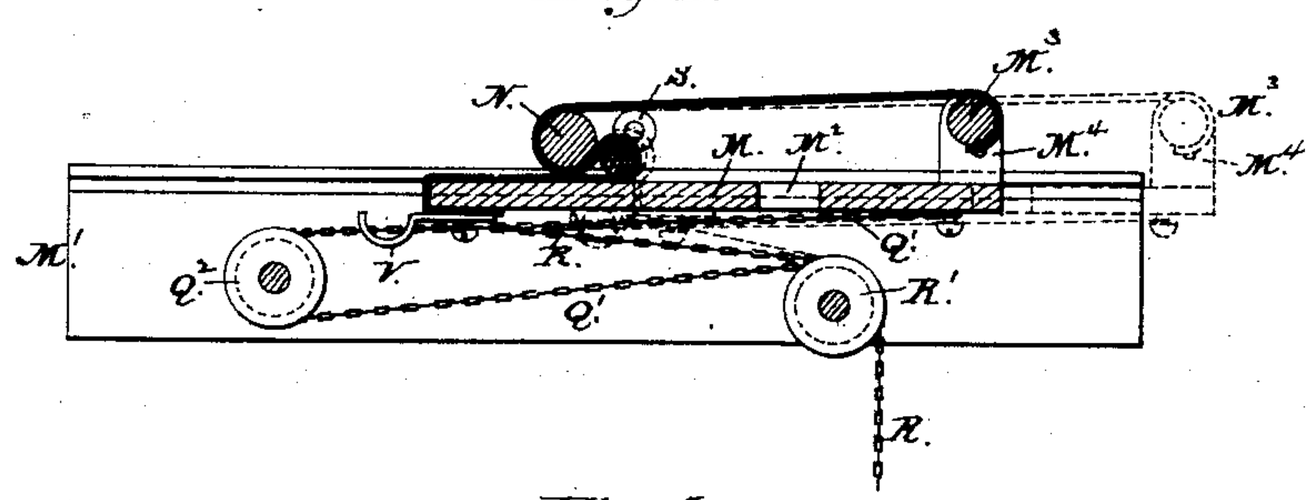


Fig. 5.

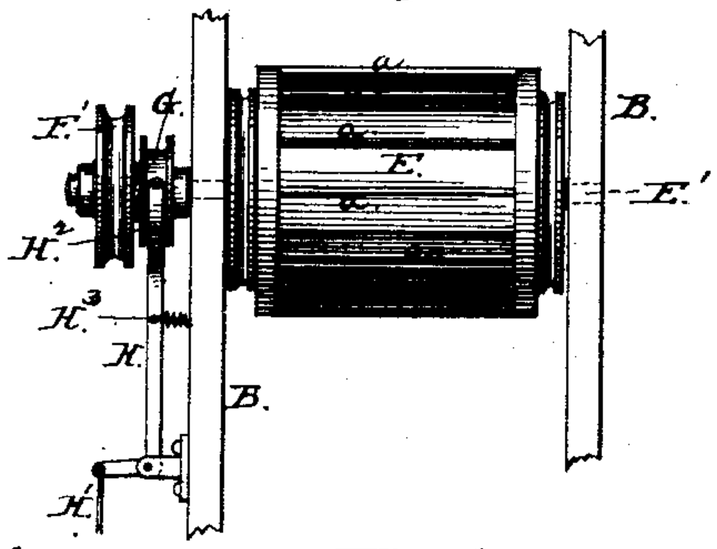
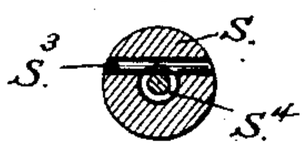


Fig. 6.

Fig. 7.



Attest:
John A. Ellis.
Rena Dobson

Inventors:
Frederick Thurnau
Adolph Hampe
By David A. Burr
Atty.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

FRIEDRICH THURNAU AND ADOLPH HAMPE, OF NEW YORK, N. Y.

CIGAR-BUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 343,349, dated June 8, 1886.

Application filed February 17, 1886. Serial No. 192,186. (No model.)

To all whom it may concern:

Be it known that we, FRIEDRICH THURNAU and ADOLPH HAMPE, residing in the city, county, and State of New York, have invented certain new and useful Cigar-Bunching Machines; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 is a central vertical transverse section of our improved cigar-bunching machine; Fig. 2, a plan view of the scale by which the filling is weighed as it is delivered from the feed-wheels; Fig. 3, a plan view of the bunching-rolls and binding-apron, with the feeding mechanism above the same removed; Fig. 4, a central longitudinal section through the bunching-plate and apron in line *x x* of Fig. 3, illustrating the movements thereof; Fig. 5, a front elevation of the upper feed-wheel, illustrating the clutch by which it is thrown in and out of gear; Fig. 6, an elevation on an enlarged scale of the shaping-rolls in the bunching device, illustrating their action in the wrapping of a cigar; and Fig. 7 a cross-section in line *y y* of Fig. 6.

Our invention relates to that class of machines for measuring fillings and covering cigars, in which a proper amount of tobacco is supplied to a binder placed on a binding-apron, and which, by means of a movement of the apron, is automatically rolled to form a cigar.

The object of our invention is to obtain, in simplest form, a machine which shall automatically deliver to a binder any determinate quantity and weight of filling, uniformly and regularly at proper intervals, and roll the same into a finished bunch of the desired form.

A represents a bench or table, upon which our machine is supported. On this table is mounted a frame, B B, in the lower part of which are journaled the bunching-rollers and in the upper portion of which is mounted the upper feed-wheels, the scale, and delivery-slide.

C represents the hopper, of any suitable form and dimensions, and D a revolving stirrer mounted upon a horizontal shaft journaled in the sides of the hopper, and geared by means of pulleys and cords (see positive and dotted lines, Fig. 1) or other customary devices for the purpose to the driving mechanism of the machine, so as to be rotated thereby.

Immediately under the opening in the lower end of the hopper a wheel, E, is mounted to rotate upon a horizontal axle, E′, journaled at either end in the frame of the machine. The periphery of this wheel is made solid, and upon it are secured at uniform intervals radial flanges *a a a*, projecting therefrom and arranged longitudinally, and extend from end to end thereof. These radial flanges serve to divide the periphery of the wheel into a series of equal compartments, as shown in Figs. 1 and 5. Beneath this main wheel E a second feed-wheel, F, similarly constructed, but of a diameter about one-half smaller, is mounted to rotate upon a parallel axis placed in front as well as below the axis of the main wheel at such suitable distance therefrom as to bring the peripheries of the two wheels into close proximity, as shown in Fig. 1. The periphery of this second wheel, F, is divided by radial flanges *a′ a′ a′* into a series of longitudinal compartments corresponding to those on the wheel E. By reason of this arrangement the contents of the compartments on the main wheel will, in the revolution of said wheel, drop therefrom into the compartments on the periphery of the second wheel. The two wheels are geared together by belts or cords carried over pulleys fixed upon the outer ends of their axles, as illustrated by dotted lines in Fig. 1, or by other equivalent gearing, and in such manner as that the second smaller wheel shall revolve at a much higher speed than the first or upper wheel. The main wheel E is thrown in and out of gear with the driving-pulley of a suitable motor by means of a pulley, F′, and clutch G, (see Fig. 5,) of any approved form, which need not herein be more particularly described. This clutch G is operated by a lever, H, as hereinafter set forth.

Immediately below the second wheel, F, and in position to receive the contents of its compartments as they are automatically discharged

therefrom in their revolution, a scale-pan, I, is pivoted upon the ends *b' b'* (see Fig. 2) of a transverse rod (or equivalent pivot-pins) projecting from either side of the bottom of the rear end of the pan I, and which rest in suitable pivotal sockets in the frame of the machine. A horizontal poise-rod, J, is made to project centrally from the rear end of the pan, so as to counterbalance the portion of the pan in front of the pivots *b' b'*. This rod J is fitted to screw for adjustment in and out of a threaded socket, J', secured to the under side of the pan. The descent of the beam below the horizontal is prevented by a transverse rod or stop, *c*. The feed-wheels and scale are inclosed by a suitable outer casing, B', secured upon the frame, having openings *d d'* therein, through which access may be had to the wheels and scale. An apron or inclined plate, F^2, (see Fig. 1,) is secured to project from the front of the case partially under the wheel F, to insure a complete delivery of the fillings dropping from the wheel into the scale-pan. An inclined way or chute, K, is placed immediately under the scale-pan, to extend from beneath its pivotal axis down to a point above the pocket of the bunching-machine, so as to discharge the fillings delivered thereon by the pan into said pocket, or into a suitable funnel, L, (see Fig. 1,) which is held over the pocket while it is being filled. This funnel L is made of light sheet metal to embrace the entire width of the lower end of the inclined chute, and its lower end is adapted to conform to the opening in the bunching-pocket.

M, Figs. 1 and 4, represents the reciprocally-sliding plate of the bunching apparatus. This plate is fitted to slide freely longitudinally in suitable ways embracing its two lateral edges, and which are formed in the upper part of the lower side bars or plates, M' M', of the frame B B of the machine. To the front end of this sliding plate M is secured the front end of the binding-apron P, of cotton cloth or other suitable pliable material, which is made of the same width as the plate and long enough to extend loosely to an adjusting or take-up roller, M^3, (see Fig. 4,) mounted in suitable bearings at and upon the rear end of the plate, and to which its rear end is made fast. While it is preferred to secure the rear end of the apron to a take-up roller, M^3, it may be secured directly to the plate. A guide-roller, N, is mounted to rotate upon journal-pins N' N', projecting from fixed bearing-plates B^2 B^2, secured to the side bars, M' M', of the frame into sockets formed in each end of the roller, whereby the roller is supported over the rear end of the bunching-plate when the plate is moved forward to its extreme point. The bearing-plates B^2 B^2 are provided with slots *e*, (see Fig. 1,) formed therein at a right angle to the plane of movement of the bunching-plate M, and the journal-pins N' N' are threaded, and, being carried through said slots, are made fast by means of nuts O O, screwing thereon on opposite sides of each plate. By loosening one of the nuts either pin may be moved in its slot, and by tightening its nut the pin is held fast. By this means the pins N' N' and the roller N, upheld thereby, may be readily adjusted to and from the bunching-plate M. A wide transverse slot, M^2, is cut in the plate M, near its rear end, so that it will be immediately in front of and parallel with the roller N when the plate is pushed to the front, as shown in Fig. 1, and the apron P is left loose enough, when adjusted in length, to pass from the take-up roller M^3 over the roller N and to drop into a loop into the slot M^2, so as to form a pocket therein. (See Fig. 1.) The depth of this pocket formed by the looping of the apron P into the slot M^2 is determined by an adjustment of the length of the apron effected by the rotation of the take-up roller M^3. This roller M^3 is supported and is fixed when adjusted by means of set-screws which pass through threaded apertures in the bearing-plates M^4 M^4, (see Fig. 4,) so as to project horizontally therefrom and enter pivotal sockets in the ends of the roller. The sliding bunching-plate M is carried forward automatically when left free, by means of a weight or weights, Q, (see Fig. 1,) suspended from a chain or chains, Q', made fast to the under side of the rear end of the plate M, and carried thence each forward over a friction-pulley, Q^2, rotating upon a transverse shaft fixed in the frame under the front end of the plate, and back over a second pulley, Q^3, (see Fig. 3,) similarly mounted at the rear, whereby the weight will operate to produce a constant tension upon the sliding plate M, to draw it to the front. This tension is overcome and the plate drawn to the rear, when required, by means of a central chain, R, made fast to the front end of the plate M on its under side, and which extends thence back over a friction-pulley, R', (see Figs. 1 and 3,) rotating on the same axial shaft with the pulleys Q^3, and is secured to the free end of a treadle, R^2, whereby a downward pressure upon the treadle is made to draw back the plate M and raise the weights Q. Evidently a spring may be substituted as an equivalent for the weights, to produce this automatic forward movement of the plate M, as described. The clutch G, (see Fig. 5,) by which the feed-wheels are thrown into and out of gear with the driving-pulley F', is actuated by means of a second treadle, G', Fig. 1, whose free end is suspended by means of a coupling rod or link, H', from the horizontal arm of a bent lever, H, whose longer vertical arm (see Fig. 5) terminates in a fork, H^2, which engages the sliding collar of the clutch. The clutch is automatically disengaged by means of a spring, H^3, actuating the lever H.

S S', Figs. 3 and 6, represent the shaping-rolls by which the ends of the cigar are fashioned. These rolls are mounted opposite each other in the bearings B^2 B^2, which carry the guide-roller N, so as to project transversely

over the sliding plate M, from each side toward the center thereof, immediately in the rear of said guide-roller N, (see Fig. 3,) and under the apron P, which is carried over said roller. The rolls S and S′ (see Fig. 6) are formed peripherally of a shape the counterpart of that required for the end of the cigar, and are journaled to revolve freely upon stud-pins T, mounted to project horizontally from the bearing-plates B^2 B^2, their detachment from the studs being prevented without interfering with their free rotation by means of transverse locking-pins S^3, which pass transversely through the necks of the rolls and enter annular grooves S^4, encircling the studs, as shown in Figs. 6 and 7. The adjustment of the two rolls S S′ to and from the center of the reciprocating plate M is produced by means of a thread cut on each stud-pin T, upon which nuts T′ T′ are run, one on each side of the bearing-plate B^2, so that the stud-pin may be thereby moved longitudinally in its bearings, and be fixed when adjusted by screwing the nuts securely up against the bearing-plate. The adjustment of the shaping-rolls S S′ laterally to and from the bunch is produced by extending the apertures in the bearing-plates B^2 B^2 longitudinally and diagonally toward the under side of the guide-roller N, as shown in Fig. 1, so that the stud-pins may be moved in said slotted apertures to and from the roller in a direction so inclined toward the plate M as that the rolls carried on the studs will be brought nearer the plate as they are carried nearer the guide-roller. Hooks V V (see Figs. 1 and 3) are secured to and project from the front end of the bunching-plate M, to catch the finished bunches as in the operation of the machine they roll off of said plate.

In the operation of our improved machine, tobacco fillings are placed in the hopper C to drop and be fed thence in small quantities through the bottom of the hopper into the longitudinal compartments upon the wheel E, the delivery thereof being facilitated by the stirrer D. The stirrer is put in motion and the wheels E and F are made to revolve when a feed is required by a pressure of the operator's foot upon the treadle G′, which will operate to throw the shaft of the wheel E into gear with the motor by the action of the clutch G. As the wheel E, fed from the hopper, slowly revolves, the tobacco falling into the several compartments of the wheel is automatically delivered from each into the compartments of the more rapidly-moving wheel F, by which in turn each charge is automatically delivered into the scale-pan I, poised below it. As the wheel F moves three times as fast as the wheel E, each charge delivered from one of the compartments of the wheel E is distributed into three of the corresponding compartments of the wheel F, so that the intermittent delivery of the tobacco into the scale-pan I is made in small quantities at regular intervals, which may be long enough to permit the scale to tip so soon as it has received a quantity sufficient to overbalance the weight of the rod J, and after discharging itself resume its normal position before another delivery is made therein. By this means the charges automatically delivered from the scale will correspond exactly and uniformly in weight and quantity. The contents of the scale discharged into the slide or chute K will be transferred thereby to the funnel L, and through it to the pocket formed by the loop of the apron P, dropped through and suspended in the slot M^2 in the sliding plate M. When a suitable charge has thus been distributed evenly along the entire length of the pocket upon a binder previously placed therein by hand, the further movement of the feed-wheel is suspended by the removal of the pressure of the operator's foot from the treadle G′, which allows the spring H^3 to come into play to release the clutch G. The operator then withdraws the funnel L from the pocket, and by pressing upon the treadle R^2 will draw the bunching-table M backward. This rearward movement of the table will operate to draw the pocket or loop charged with tobacco out of the slot M^2 in the table, and compress it at the rear of the guide-roller N, as shown by positive lines in Fig. 4, while the movement of the apron P will produce a rotation of the binder and its charge of tobacco upon itself back of the roller, and thereby effectually twist the binder about the filling and roll it into a finished bunch, its two ends being in the meantime shaped and pointed by the pressure thereon of the rolls S S′. As the front end of the bunching-plate M passes back from under the roller N the completed bunch will drop out from the folds of the apron upon the hooks V V, to be thence removed when the plate is carried forward. So soon as the operator removes his foot from the treadle R^2 the weight Q will come into play to carry the plate M forward again. The finished bunch is now removed from the hooks V V, the apron P looped into the pocket M^2, a new binder placed therein, the funnel L inserted, and by the pressure of the operator's foot upon the treadle G′ the feed is resumed and the binder in the pocket again quickly charged with an exact quantity of fillings.

The amount of filler for each cigar can be readily varied by moving the poise-rod J of the scale-pan I in or out.

The shapes of the ends of the cigars may be changed at will by changing the rolls S S′, and these rolls are adapted to the length and size of the cigar by an adjustment of their pivotal stud-pins T T in the bearings B^2 B^2, in which they are mounted.

We claim as our invention—

The combination, in a cigar bunching and binding machine, with a hopper and a scale-pan poised beneath the same, of two interposed feed-wheels of varying diameter, constructed with peripheral compartments and

geared together, so that the lower wheel of smaller diameter shall revolve at a higher speed than the upper larger wheel, whereby the fillings delivered from the hopper shall be received into the compartments of the larger wheel, thence discharged upon the smaller wheel, and from that delivered into the scale-pan, all substantially in the manner and for the purpose herein set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

FRIEDRICH THURNAU.
ADOLPH HAMPE.

Witnesses:
J. F. ACKER, Jr.,
RENA DOLSON.